

ENGINEERING STATEMENT
APPLICATION FOR A DTV
CONSTRUCTION PERMIT FOR
AN EXISTING TELEVISION TRANSLATOR
K34DC, ASTORIA, OREGON
CHANNEL 34 536 WATTS MAX ERP 419 METERS RC/AMSL

APRIL 2010

COHEN, DIPPELL AND EVERIST, P.C.
CONSULTING ENGINEERS
RADIO AND TELEVISION
WASHINGTON, D.C.

COHEN, DIPPELL AND EVERIST, P. C.


City of Washington)
) ss
District of Columbia)

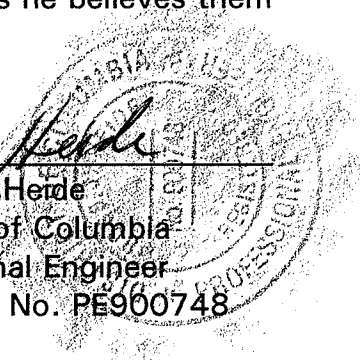
Ross J. Heide, being duly sworn upon his oath, deposes and states that:

He is a graduate of the Massachusetts Institute of Technology in Operations Research and Management Science, a Registered Professional Engineer in the District of Columbia, and employed by Cohen, Dippell and Everist, P.C., Consulting Engineers, Radio - Television, with offices at 1300 L Street, N.W., Suite 1100, Washington, D.C. 20005;

That the attached engineering report was prepared by him or under his supervision and direction and

That the facts stated herein are true of his own knowledge, except such facts as are stated to be on information and belief, and as to such facts he believes them to be true.



Ross J. Heide
District of Columbia
Professional Engineer
Registration No. PE900748


Subscribed and sworn to before me this 9th day of April, 2010.



Notary Public


My Commission Expires: 2/28/2013

INTRODUCTION

This engineering statement has been prepared on behalf of NVT Portland Licensee, LLC, licensee of TV translator K34DC, Astoria, Oregon. This statement supports the licensee's request to convert to DTV operation on the currently licensed analog channel 34, commonly referred to as "flash-cut" with a DTV effective radiated power ("ERP") of 536 watts at a radiation center above mean sea level ("RCAMSL") of 419 meters.

TRANSMITTER SITE

The existing antenna will be utilized and no significant alteration of the tower is proposed. There is no change in transmitter site. The geographic coordinates of the site follow below.

North Latitude: 46° 17' 10"

West Longitude: 123° 53' 50"

NAD-27

ELEVATION DATA

Elevation of site above mean sea level	404 meters (1325.5 feet)
Center of radiation of antenna above ground level	15 meters (49.2 feet)
Center of radiation of antenna above mean sea level	419 meters (1374.7 feet)

The existing tower is less than 200 feet and does not require an Antenna Structure Registration Number ("ASRN").

EQUIPMENT DATA

Transmitter:	Type-approved, TTC XLS1000 (stringent mask) or equivalent
Transmission Line:	Andrew, Type LDF4-50A, 5/8" foam heliax, 18.7 meters (61.3 feet) with 83.7% efficiency or equivalent [1.26 dB loss/100 ft]
Antenna:	Bogner, B8UG with maximum gain of 28.2 and 0° electrical beam tilt

POWER DATA

Transmitter:	22.7 W	13.56 dBW
Transmission Line Efficiency (Loss):	83.7%	(0.773) dB
Input Into Antenna:	19.0 W	12.79 dBW
Antenna Gain:	28.2	14.50 dB
ERP:	536 W	27.28 dBW

As indicated above, the transmitter with typical power output of 22.7 watts will deliver 19.0 watts to the input of the antenna. The antenna, having a maximum gain of 28.2 and an electrical beam tilt of 0°, will produce maximum ERP of 536 watts. A map providing the protected contour of the proposed facility compared to the currently licensed operation of K34DC has been included as Exhibit E-1 of this report. The antenna elevation pattern and associated tabulation and the horizontal pattern and accompanying tabulation are on file at the Commission as the currently licensed antenna for K34DC with no alterations has been proposed.

Other Broadcast Facilities

A brief analysis was completed to determine the presence of stations in the vicinity of the K34DC tower using the April 7, 2010 data contained within the Commission's Consolidated Database System ("CDBS"). Within 500 meters of the proposed site, there are no authorized FM radio stations or television stations. Nine (9) licensed low-power analog television and television translator stations aside from K34DC were found within 500 meters in addition to six (6) low-power CP's and applications. According to the licensee, only five of the licensed translators are active at the site. There are no AM facilities within 3.2 km of the existing tower. Although no adverse technical affects are expected due to the proposed changes, the licensee will take measures to resolve any problems proven to be related to the changes proposed in this application.

Interference Analysis

A study of predicted interference caused by the proposed K34DC translator operation has been performed using the Longley-Rice program for which the source data has been posted by the Commission on its website at http://www.fcc.gov/oet/dtv/dtv_apps.html. The FCC's FORTRAN-77 code was modified only to the extent necessary (primarily input/output handling) for the program to run on a Microsoft Windows XP/Intel platform. Comparison of service/interference areas and population indicates this model closely matches the FCC's digital low-power TV/translator evaluation program. Best efforts have been made to use data and calculation identical to the FCC's program. The model employs the Longley-Rice propagation methodology and evaluates in grid cells of approximately 1 sq. km. Using 3-second terrain data

sampled approximately every 1.0 km at one-degree azimuth intervals with 2000 census centroids, all studies are based upon data in the current CDBS database update of the FCC's engineering database. A Longley-Rice study was performed with the proposed K34DC digital translator facilities and all relevant stations listed in the FCC database as of April 7, 2010. The study results and the included stations are listed in Table I.

FCC Rule, Section 1.1307

The proposed 536 watt directional operation will utilize a Bogner, Type B8UG antenna (or equivalent) described above with a center of radiation above ground of 15 meters. The existing antenna is top-mounted on the tower with an overall height of 19 meters above ground.

The proposed operation based upon the current OET Bulletin No. 65, Edition 97-01 dated August 1997 and Supplement A meets the provisions of the FCC radiofrequency field ("RFF") guidelines, and thus, complies with Section 1.1307 of the FCC Rules. The elevation pattern for the Bogner, Type B8UG antenna shows a maximum relative field of less than 0.2 toward the ground (30° to 90° below the horizontal). Calculation according to OET Bulletin 65 predicts a maximum RFF power density of less than $4.23 \mu\text{W}/\text{cm}^2$, 2 meters above ground or less than 1.1% of the uncontrolled Maximum Permissible Exposure ("MPE") guideline. As this is less than 5% of the MPE, Section 1.1307(b)(3) of the Commission's Rules does not require an RFF assessment of all of the stations in the vicinity.

The RFF contribution is calculated using the following basic formula:

$$S = \frac{33.4(F^2) \text{ Total ERP}}{R^2}$$

where:

S = power density in $\mu\text{W}/\text{cm}^2$

F = relative field factor

Total ERP = ERP Horizontal Polarization + ERP Vertical Polarization

R = RCAGL - 2 meters

ERP = RMS ERP in watts for DTV Stations

ERP = $[0.4 \text{ ERP}_V + \text{ERP}_A]$ for NTSC Stations

ERP_V = peak visual ERP in watts

ERP_A = RMS aural ERP in watts

ERP = ERP (horizontally polarized) + ERP (vertically polarized)

Authorized personnel and rigging contractors will be alerted to the potential zone of high radiation on the tower, and if necessary, the station will operate with reduced power or terminate the operation of the transmitter as appropriate when it is necessary for authorized personnel or contractors to perform work on or near the tower. Workers and the general public, therefore, will not be subjected to RFF levels in excess of the current FCC guidelines.

Environmental Assessment

An environmental assessment ("EA") is categorically excluded under Section 1.1306 of the FCC Rules and Regulations as the tower was constructed prior to the requirements specified in WT Docket No. 03-128 and the applicant indicates:

- (a)(1) The existing tower is not located in an officially designated wilderness area.

- (a)(2) The existing tower is not located in an officially designated wildlife preserve.
- (a)(3) The proposed facilities will not affect any listed threatened or endangered species or habitats.
- (a)(3)(ii) The proposed facilities will not jeopardize the continued existence of any proposed endangered or threatened species or likely to result in the destruction or adverse modification of proposed critical habitats.
- (a)(4) The proposed facilities located on a tower which was built prior to the adoption of WT Docket No. 03-128 and is grandfathered and has not affected any known districts, sites, buildings, structures, or objects significant in American history, architecture, archaeology, engineering, or culture.
- (a)(5) The existing tower is not located near any known Indian religious sites.
- (a)(6) The existing tower is not located in a flood plain.
- (a)(7) The installation of the DTV facilities on an existing tower will not involve a significant change in surface features of the ground in the vicinity of the tower.
- (a)(8) It is not proposed to equip the tower with high intensity white lights unless required by the FAA.
- (b) Workers and the general public will not be subjected to RFF levels in excess of the current FCC guidelines contained in OET Bulletin No. 65, Edition 97-01, dated August 1997 and Supplement A.

COHEN, DIPPELL AND EVERIST, P.C. Consulting Engineers Washington, D.C.

**PROTECTED CONTOUR OF
ANALOG LICENSE CH. 34
74 dBu F(50,50)**

**PROTECTED CONTOUR OF
PROPOSED DIGITAL CH. 34
51 dBu F(50,90)**

WAHKIAKUM

COWLITZ

EXHIBIT 1
PROTECTED CONTOUR
OF THE PROPOSED DIGITAL OPERATION OF
K34DC, ASTORIA, OREGON
CHANNEL 34 536 WATTS ERP (MAX. DA) 419 METERS RCAMSL
APRIL 2010

EXHIBIT 1

PROTECTED CONTOUR

K34DC, ASTORIA, OREGON

CHANNEL 34 536 WATTS ERP (MAX. DA) 419 METERS RCAMSL

APRIL 2010

A horizontal number line with tick marks at 0, 5, and 10. The word "Kilometers" is written below the line. The segment between 5 and 10 is shaded gray.

CREATED WITH MAPTITUDE® GIS FOR WINDOWS FROM CALIPER CORPORATION

COHEN, DIPPELL AND EVERIST, P.C.

TABLE I
LONGLEY-RICE INTERFERENCE
FOR THE OPERATION FOR
K34DC, ASTORIA, OREGON
CHANNEL 34 536 W MAX ERP 419 METERS RCAMSL
APRIL 2010

<u>Channel</u>	<u>Call</u>	<u>City/State</u>	<u>Dist(km)</u>	<u>Status</u>	<u>FCC File No.</u>	<u>Result</u>
19	K19EI	PACIFIC C-CLOVERDALE OR	119.8	LIC	BLTT-20020311AAN	0.00%
20	K63GK	PORTLAND OR	135.8	APP	BPTTL-20020627AAR	0.00%
20	K20HT	ROCKAWAY OR	60.4	LIC	BLTT-20030609AGF	0.00%
20	KOXI-CA	CAMAS WA	123	LIC	BLTTA-20070831ACY	0.00%
26	K26DB	ASTORIA OR	0	LIC	BLTT-19911016IG	No interference
26	K26HS	TILLAMOOK OR	93.6	LIC	BLTTL-20070625ADJ	0.00%
31	K31HK	RAINIER OR	81.6	LIC	BLTT-20070502ABR	0.00%
31	K31IR-D	GRAYS RIVER WA	33	CP	BDISTT-20060328AGL	No interference
33	KRCW-TV	SALEM OR	124.2	CP	BPCDT-20080619AKY	0.00%
33	KRCW-TV	SALEM OR	124.2	LIC	BMLCDT-20070123ABS	0.00%
33	KWPX-TV	BELLEVUE WA	199.5	CP MO	BMPCDT-20080620AJH	No interference
33	NEW	TOKELAND WA	51.2	APP	BNPDTL-20100324ABC	0.27%
34	BC-PT-38	DUNCAN BC	277.9	AL	CANADA-1367829NULL	No interference
34	VACANT	DUNCAN BC	278	LIC	BPFS-20081119AAK	No interference
34	K34IC	GLIDE OR	330.3	CP	BDFCDTL-20090804ABY	No interference
34	K34IC	GLIDE OR	330.3	LIC	BLTTL-20061113AAJ	0.00%
34	NEW	HARRISBURG OR	261.4	APP	BNPDTL-20090825APQ	No interference
34	K40AM	HOOD RIVER OR	188.9	CP	BDISTT-20070815ABG	No interference
34	K40AM	HOOD RIVER, ETC. OR	188.6	APP	BSTA-20070815ABP	No interference
34	K34DI	LA GRANDE OR	376.3	LIC	BLTT-19920304II	0.00%
34	K34AI-D	LA PINE OR	327.4	LIC	BLDTT-20090821ABT	No interference
34	KKEI-LD	PORTLAND OR	123	CP	BDCCDTL-20061027ACO	No interference
34	K05MG	SWEET HOME OR	243	APP	BDISDTL-20090729AED	No interference
34	K65AE	TERREBONNE OR	286	CP	BDFCDTT-20090820ABD	No interference
34	K65AE	TERREBONNE OR	303	CP	BDISTT-20061212ABJ	No interference
34	K34KH-D	BELLINGHAM WA	277.6	CP	BDCCDTL-20061030ARG	No interference
34	K34KV-D	KENNEWICK WA	361.2	CP	BNPDTL-20090825BIZ	0.00%
34	K34HK	LONGVIEW WA	73.7	APP	BSTA-20061109ADS	No interference
34	K34HK	LONGVIEW WA	73.8	LIC	BLTTL-20080509AAL	No interference
34	KIRO-TV	OLYMPIA WA	110.4	CP	BDRTCT-20090403ACA	No interference

COHEN, DIPPELL AND EVERIST, P.C.

TABLE I
LONGLEY-RICE INTERFERENCE
FOR THE OPERATION FOR
K34DC, ASTORIA, OREGON
CHANNEL 34 536 W MAX ERP 419 METERS RCAMSL
APRIL 2010

<u>Channel</u>	<u>Call</u>	<u>City/State</u>	<u>Dist(km)</u>	<u>Status</u>	<u>FCC File No.</u>	<u>Result</u>
34	K34EM	WENATCHEE WA	310.2	CP	BDFCDTT-20060329AES	No interference
34	K34EM	WENATCHEE WA	310.2	LIC	BLTT-19971030JA	No interference
35	K35HU	GRAYS RIVER, ETC. OR	33	LIC	BLTT-20061018ABS	No interference
35	KORK-CA	PORTLAND OR	123	LIC	BLTTA-20070831ACZ	No interference
35	K35CR	TILLAMOOK, ETC. OR	119.7	CP	BDFCDTL-20090810ABV	No interference
35	K35CR	TILLAMOOK-LINCOLN CI OR	119.7	LIC	BLTTL-19940829IB	No interference
35	K35HU	GRAYS RIVER WA	33	APP	BDFCDTT-20100330ACD	1.74%
36	K36GU	ROCKAWAY & VICINITY OR	60.4	LIC	BLTT-20030610AAE	0.00%
36	KEVE-LP	LONGVIEW WA	81.6	LIC	BLTT-19931202IF	0.00%
38	K38GS	GRAYS RIVER, LEBAM WA	33	LIC	BLTT-20040412ACX	No interference
41	K41IP	RAINIER OR	81.6	LIC	BLTT-20070209ABP	0.00%
41	K41GG	ROCKAWAY, ETC. OR	60.4	LIC	BLTT-20010420AAU	0.00%
41	K41KT-D	GRAYS RIVER WA	33	CP	BDISTT-20060323AIE	No interference
42	K42IR	ASTORIA OR	0.1	LIC	BLTTL-20090327AIA	No interference

Section III - Engineering (Digital)

TECHNICAL SPECIFICATIONS

Ensure that the specifications below are accurate. Contradicting data found elsewhere in this application will be disregarded. All items must be completed. The response "on file" is not acceptable.

TECH BOX

1. Channel: _____
2. Translator Input Channel No. _____
3. Station proposed to be rebroadcast:

Call Sign	City	State	Channel
-----------	------	-------	---------

4. Antenna Location Coordinates: (NAD 27)

____° ____' ____" ☐ N ☐ S Latitude
____° ____' ____" ☐ E ☐ W Longitude

5. Antenna Structure Registration Number: _____

☐

Not applicable

See Explanation
in Exhibit No.

☐

FAA Notification Filed with FAA

6. Antenna Location Site Elevation Above Mean Sea Level: _____ meters
7. Overall Tower Height Above Ground Level: _____ meters
8. Height of Radiation Center Above Ground Level: _____ meters
9. Maximum Effective Radiated Power (ERP): _____ kW
10. Transmitter Output Power: _____ kW
11. a. Transmitting Antenna: ☐ Nondirectional ☐ Directional ☐ Directional composite

Manufacturer	Model
--------------	-------

- b. Electrical Beam Tilt: _____ degrees ☐ Not applicable

c. Directional Antenna Relative Field Values:

Rotation: _____ ° ☐ No rotation ☐ N/A (Nondirectional)

Degree	Value	Degree	Value	Degree	Value	Degree	Value	Degree	Value	Degree	Value
0		60		120		180		240		300	
10		70		130		190		250		310	
20		80		140		200		260		320	
30		90		150		210		270		330	
40		100		160		220		280		340	
50		110		170		230		290		350	
Additional Azimuths											

NOTE: In addition to the information called for in this section, an explanatory exhibit providing full particulars must be submitted for each question for which a "No" response is provided.

12. **Out-of-Channel Emission Mask:** Simple ☐ Stringent ☐

CERTIFICATION

13. **Interference.** The proposed facility complies with all of the following applicable rule sections. 47 C.F.R. Sections 74.709, 74.793(e), 74.793(f), 74.793(g), 74.793(h), 74.794(b) and 73.1030. ☐ Yes ☐ No

See Explanation in Exhibit No.

14. **Environmental Protection Act.** The proposed facility is excluded from environmental processing under 47 C.F.R. Section 1.1306 (*i.e.*, the facility will not have a significant environmental impact and complies with the maximum permissible radiofrequency electromagnetic exposure limits for controlled and uncontrolled environments). Unless the applicant can determine RF compliance. An **Exhibit is required.** ☐ Yes ☐ No

See Explanation in Exhibit No.

Exhibit No.

By checking "Yes" above, the applicant also certifies that it, in coordination with other users of the site, will reduce power or cease operation as necessary to protect persons having access to the site, tower or antenna from radiofrequency electromagnetic exposure in excess of FCC guidelines.

15. **Channels 52-59.** If the proposed channel is within channels 52-59, the applicant certifies compliance with the following requirements, as applicable:

☐ The applicant is applying for a digital companion channel for which no suitable channel from channel 2-51 is available.

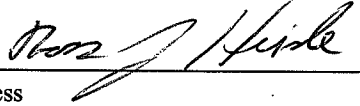
☐ Pursuant to Section 74.786(d), the applicant has notified, within 30 days of filing this application, all commercial wireless licensees of the spectrum comprising the proposed TV channel and the first adjacent channels thereto, for which the proposed digital LPTV or TV translator antenna site lies inside the licensed geographic boundaries of the wireless licensees or within 75 miles and 50 miles, respectively, of the geographic boundaries of co-channel and adjacent-channel wireless licensees.

PREPARER'S CERTIFICATION ON PAGE 8 MUST BE COMPLETED AND SIGNED.

16. **Channels 60-69.** If the proposed channel is within channels 60-69, the applicant certifies compliance with the following requirements, as applicable:

- ☐ Pursuant to Section 74.786(e), the applicant has notified, within 30 days of filing this application, all commercial wireless licensees of the spectrum comprising the proposed TV channel and the first adjacent channels thereto, for which the proposed digital LPTV or TV translator antenna site lies inside the licensed geographic boundaries of the wireless licensees or within 75 miles and 50 miles, respectively, of the geographic boundaries of co-channel and adjacent-channel wireless licensees,
- ☐ Pursuant to Section 74.786(e), the applicant proposing operation on channel 63, 64, 68 and 69 ("public safety channels") has secured a coordinated spectrum use agreement(s) with 700 MHz public safety regional planning committee(s) and state frequency administrator(s) of the region(s) and state(s) within which the antenna site of the digital LPTV or TV translator station is proposed to locate, and those adjoining regions and states with boundaries within 75 miles of the proposed station location.
- ☐ Pursuant to Section 74.786(e), an applicant for a channel adjacent to channel 63, 64, 68 or 69 has notified, within 30 days of filing this application, the 700 MHz public safety regional planning committee(s) and state administrator(s) of the region and state containing the proposed digital LPTV or TV translator antenna site and regions and states whose geographic boundaries lie within 50 miles of the proposed LPTV or TV translator antenna site.

I certify that I have prepared Section III (Engineering Data) on behalf of the applicant, and that after such preparation, I have examined and found it to be accurate and true to the best of my knowledge and belief.

Name Ross J. Heide		Relationship to Applicant (e.g., Consulting Engineer) Consulting Engineer	
Signature 		Date April 9, 2010	
Mailing Address Cohen, Dippell and Everist, P.C., 1300 L Street, NW, Suite 1100			
City Washington		State or Country (if foreign address) DC	ZIP Code 20005
Telephone Number (include area code) (202) 898-0111		E-Mail Address (if available) cde@attglobal.net	

WILLFUL FALSE STATEMENTS ON THIS FORM ARE PUNISHABLE BY FINE AND/OR IMPRISONMENT (U.S. CODE, TITLE 18, SECTION 1001), AND/OR REVOCATION OF ANY STATION LICENSE OR CONSTRUCTION PERMIT (U.S. CODE, TITLE 47, SECTION 312(a)(1)), AND/OR FORFEITURE (U.S. CODE, TITLE 47, SECTION 503).